Abstract

The paper "The Primacy of Intention in Human Action: A Three-Stage Model of Conscious Process and Field Awareness" by Eric Hutton and Ralph Buchwitz proposes a phenomenologically grounded and cross-disciplinary model of human consciousness, asserting that intention precedes both thought and verbal expression. This model, characterized as Intention → Thought → Expression, challenges the conventional scientific assumption that conscious thought is the initial stage of volitional action. It argues that the idea of thought initiating behavior might be an "interpretative overlay" rather than a fundamental truth, failing to account for lived experiences where actions can precede cognition and non-verbal anticipation guides behavior.

Let's elaborate on each stage of this model, drawing on supporting and related concepts from the provided sources:

Stage One: Intention (Felt) — The Unvoiced Directive Field

This initial stage describes intention as a "preverbal, field-level dynamic", an "unvoiced directive field". It represents the foundational impulse that arises before it is consciously structured into thoughts or articulated through expression. A key insight is that this stage involves "a change in presence — a shift in the field".

Elaboration on the Field-Level Dynamic: The concept of a "field" is central to understanding this stage. In Gestalt therapy, for instance, a "field" is described as a "systematic web of relationships" where every element is interconnected within a larger context. This resonates with the idea of a pervasive, relational dynamic rather than a localized, discrete mental event. The mention of "Consciousness Field Theory" in the sources further highlights the theoretical exploration of consciousness as a field.

Supporting the "field-level" and "pre-rational" nature of intention, the sources refer to Meijer & Jerman (2020), who model "pre-rational field-level coherence in quantum biosystems". This suggests that intention might be rooted in fundamental biological and even quantum phenomena, aligning with the idea of "Order stability via Fröhlich condensation in bio, eco, and social systems". Such a perspective positions intention as emerging from a deeper, more fundamental level of systemic organization, perhaps even before discrete neural firing patterns that constitute thought. García (2024) and Sarasso et al. (2024) describe "affective, field-level conditions" as precursors to awareness in therapeutic and perceptual contexts, with concepts like "affective atmospheres" and "affective entropy" potentially being measurable aspects of this field. This implies that these pre-cognitive, felt intentions might manifest as an overall affective state or "atmosphere" that shifts prior to any explicit thought.

The "fields model of presence", explored within relationship-based health professions like counselling and nursing, provides another lens for understanding this "shift in the field". This model proposes that presence can develop from a state of absence to one of transformation, existing only within a deep interpersonal relationship. "Partial Presence" describes a shift towards connection when one becomes aware of another's presence, though the other may still be viewed as an "object". This suggests a fluid process of presence, requiring "holistically focused" "interpersonal sensitivity" where the practitioner adapts to and with the client in the "here and now". This fluidity and relational aspect of "presence" aligns with intention as a dynamic, evolving field that changes, influencing and being influenced by the environment and other agents, even at an unconscious level.

Unvoiced and Ontologically Primary Nature: The model's assertion that intention is "unvoiced" and precedes thought is strongly supported by neuroscientific and psychological research on implicit and non-conscious processes. Dual-process models in health psychology, for instance, acknowledge that both reflective (conscious) and implicit (non-conscious) processes influence behavior, noting that traditional theories focused solely on conscious processes have shown only modest success in changing behavior. Implicit processes are theorized to "govern behavior non-consciously" and operate "automatically and fast". This aligns with the idea that the initial, driving force of intention operates below the level of conscious verbalization or explicit awareness.

Furthermore, Mukhopadhyay's (2010) work, cited in the paper, explicitly notes the "ontological primacy of intention over cognition" in brain dynamics. This view is critical to the model, suggesting that the initial "volitional pulse" is indeed a primal cause, with conscious thought and expression following as subsequent stages. The "sense of agency," defined as the subjective experience of control over one's actions and their effects, could also originate as a subtle, pre-cognitive "felt" sense within this initial field of intention.

Stage Two: Thought (Crystallization of Intention)

In this stage, intention "stabilizes" and enters the "symbolic layer of thought," leading to "inner narrative formation, verbal ideation, [and] mental reflection". Crucially, the model emphasizes that this "follows the action, not precedes it," and that thought serves to "organize and justify behavior, but does not initiate it".

Empirical Correlates and the Readiness Potential (RP): The paper points to EEG and fMRI studies, including Libet's famous experiments, as empirical correlates supporting the idea that neural activity precedes reported conscious awareness. This is a critical area of debate in neuroscience and free will.

Benjamin Libet's pioneering work in 1983, building on Kornhuber and Deecke's 1965 discovery of the "bereitschaftspotential" or "readiness potential" (RP), found that the RP (a slow build-up of scalp electrical potential) consistently began in prefrontal motor areas hundreds of milliseconds *before* subjects reported their conscious intention to act (known as "W time"). For non-pre planned acts, this pre-conscious activity could start as early as 550 ms before the action. These findings were interpreted by some as evidence that "free will is an illusion," as actions seemed to be triggered by unconscious neural activity, with conscious awareness only arising later.

However, the interpretation of the RP and W time is highly controversial and complex. Newer studies and interpretations lend strong support to Hutton's model:

- **Stochastic and Accumulator Models**: Recent research suggests that the RP may not reflect a pre-conscious commitment to a specific movement, but rather "ongoing stochastic fluctuations" or "background neuronal noise" that precedes a decision. Decision is modeled as the crossing of a threshold of activity in specific brain regions. The RP could be a "by-product of a drift diffusion process". This means that while *some* brain activity precedes conscious awareness, it's not necessarily a fully formed, specific intention, but rather a preparatory state that then "crystallizes" into a thought.
- **Reconstruction of Intention**: Studies have shown that the conscious intention (W time) can be influenced by events that occur *after* the action itself, suggesting it is partially "reconstructed according to a process of inference". For example, stimulating the pre-supplementary motor (pre-SM) area *after* a movement influenced the reported timing of intention backward in time. Similarly, delaying auditory feedback after a button press made participants report their intention to press the button *later*. This supports the idea that the

conscious "thought" of having intended an action is a post-hoc rationalization or narrative, rather than the initial causal event.
- **Predictive Brain Activity**: fMRI studies have shown that brain regions like the frontopolar cortex (BA10) can encode a subject's motor decision with reasonable accuracy up to 7 seconds *before* the subject consciously experiences making the choice. This "unconscious determinant" of "free decisions" further substantiates that a non-conscious "intention" is at play long before conscious "thought" about the action forms.

Role of Conscious Processes and Self-Regulation: While thought doesn't initiate action in this model, it is crucial for "organizing and justifying behavior". This aligns with the role of conscious, reflective processes in self-regulation and planning. These "cognitive models introspect attitudes, risk perceptions, and beliefs," leading to behavioral intentions. Strategies like "implementation intentions" ("if/then" plans) and "action planning" (specifying "when," "where," and "how") are conscious mechanisms to bridge the "intention-behavior gap". Such plans create a strong link between a situational cue and goal-directed behavior, potentially triggering actions automatically once the initial "intention" is formed.

The reflective system, seen as evolutionarily newer, performs tasks that non-conscious processes cannot. This is where concepts like "free will" gain their intuitive meaning. The sources discuss free will as a "capacity" comprising "cognitive abilities" or "executive functions" such as planning, predicting future outcomes, inhibitory control, attentional control, working memory, and creativity. These functions represent the structured, volitional aspects of "thought" that allow an agent to control actions, suppress urges, and adapt to changing contexts, even if the initial impulse originated non-consciously. The "veto power," proposed by Libet, where conscious will can block a movement even after the brain has begun preparing it, is a prime example of the "thought" stage exerting control over a preceding "intention."

Stage Three: Expression (Verbal or Internal Realization)

The final phase, expression, manifests as "spoken, written, gestural" actions or an "internal monologue". The paper states that at this stage, "both intention and thought are complete," and expression is merely the "confirmation, not the cause".

Behavioral Manifestation and Confirmation: Expression is the observable or internal culmination of the preceding stages. It is the "manifest behavioral effect" that helps produce what we call "free will". This includes "overt behaviors" to which we attribute freedom. In the context of "playful interactions," audience behavior, such as physical engagement or gestures, is observed to confirm play, rather than relying on their self-reported thoughts. This aligns with expression being a "confirmation" rather than the initial cause or even the primary driver of the experience.

Automaticity and Habit: The relationship between conscious and non-conscious processes suggests that expression can become automatic over time. If a conscious intention is "repeatedly linked with a stimulus," it can eventually fall under the guidance of non-conscious processes through "automatic activation". In this scenario, "automatic processing may be the default mode, guiding behavior in accordance with one’s implicit attitudes unless an individual is prompt into deliberation". This explains how complex actions, once initiated by an intention and refined by thought, can become fluid and seemingly effortless in their expression, such as breathing, walking, or playing a musical instrument.

In the neural dynamic architecture discussed, "world-to-mind intentional states" (which include intentions-in-action, prior intentions, and desires) drive motor behavior and bring about physical actions. Their "condition of satisfaction" (CoS), which signals successful termination, is represented separately and activated *after* the action, leading to the deactivation of the intentional

state. This reinforces that the actual physical "expression" (the action itself) is the confirmation that completes the intentional arc, rather than being the initial cause.

Sources & Summaries:

Connecting to Broader Philosophical and Scientific Frameworks

Hutton's three-stage model benefits from integration with several key frameworks in cognitive science and philosophy of mind:

Intentionality (Searle's Directions of Fit): John Searle's analysis of intentionality, where mental states are "about" relevant states of the world, provides a useful structure. The model aligns with Searle's "world-to-mind" direction of fit, where "intentions in the world-to-mind direction of fit match the ordinary meaning of the 'intention,' its 'action' variant". These intentional states "drive motor behavior," "generate sequences of actions," or "provide goals", directly mapping to the unfolding process from initial intention to overt expression. The neural dynamic architecture illustrates how desires (top-level world-to-mind intentions) can drive complex sequences of actions, involving "activate belief," "collect," and "apply" intentions, each with their own conditions of satisfaction. This hierarchical organization reflects the structured nature of the "thought" stage, where a global intention is broken down into specific action plans.

Embodied and Situated Cognition: The model's emphasis on action preceding cognition and the "felt" nature of intention aligns with embodied and situated cognition frameworks. These perspectives propose that "knowing is inseparable from doing" and that the "mind resides beyond the brain and body" (extended cognition). Sensorimotor enactivism, for example, posits that perceptual experience arises from the "dynamic coupling of the sensorimotor system and its environment". This highlights the body's active role in shaping experience and intention, suggesting that the initial "field-level" intention is deeply intertwined with the physical state and environment of the agent. The concept of "action-selection capacities," defined as the subject's ability to choose from various "object-affordance combinations," directly relates to the emergence of intentional action from this embodied context. The "playful body" and "physical interaction" in interactive art serve as concrete examples of how expression is fundamentally embodied.

The Nature of Free Will and Its Measurement: The model provides a nuanced perspective on free will. While traditional views often link free will to conscious initiation, Hutton's model suggests that the conscious aspect ("Thought") is a later stage, involved in control and justification rather than primary causation. This aligns with approaches that seek to operationalize free will as a "capacity" – "the availability of a repertoire of general skills that can be manifested and used without moment by moment conscious control". These capacities are linked to "executive functions". This perspective offers "a greater degree of realism and adherence to the actual behavioral manifestation of what we call ‘free will’," moving beyond the "stall of the metaphysical debate" about conscious initiation.

The empirical challenges in measuring "conscious intention" (W time) further support the model. Studies reveal that W time is "highly variable and systematically depends on many different factors," and is "rather easily manipulated even by interventions following the movement," suggesting it is "retrospectively constructed, at least in part". Consequently, "the simple W measurement must unfortunately be discarded as a measure of the onset of the experience of intending to move". This reinforces the idea that the "thought" stage, particularly the conscious report of intention, is a later, often reconstructed phenomenon, distinct from the underlying "field-level" intention. Other methods, like probe methods, might tap into earlier, "pre-conscious" stages of intention, but still show brain activity preceding even that.

Comparative Models in Non-Western Philosophy

The paper notes that several non-Western philosophical systems mirror the "structure of pre-cognitive emergence", providing valuable heuristic alignment with the proposed three-stage model:

- **Vedanta (India)**: The sequence of *Iccha* (Intention) → *Jnana* (Thought) → *Kriya* (Action) directly parallels Hutton's model. While philosophically framed rather than empirical, its structural analogy offers cross-cultural consistency to the idea that an initial volitional impulse precedes cognitive elaboration and physical manifestation.
- **Daoism (China)**: The concept of *Wu Wei* – "acting without acting" – suggests that action is "field-aligned, not self-initiated" and emphasizes a lack of "subject-object split," mirroring the idea of a "shared intention field". This strongly supports the "Intention (Felt)" stage as a pervasive, non-individualized dynamic that guides action without explicit conscious effort, aligning with the notion that "actions emerge from a causal web in the brain" and "spontaneous activity of the brain".
- **Buddhism (Global)**: Buddhist philosophy suggests that "thought and speech follow this volitional pulse". Its empirical validation through mindfulness and neurofeedback models is significant. Mindfulness practices, which emphasize observing the present moment and reflecting on one's "chosen way of being", can be seen as training the "Thought" stage to gain awareness and exert control over pre-existing impulses. This aligns with the "reflection-in-action" concept and the use of "mindfulness-based cognitive therapy". Meditation, in particular, has been explored for its potential to control conscious perception.
- **Qigong / Traditional Chinese Medicine (TCM)**: The sequence of *Yi* (Focused Intention) → *Qi* (Energy) → *Li* (Motion) maps directly onto "intention → mental formation → physical act". This framework conceptualizes an initial, focused intent (*Yi*) as the driver of vital energy (*Qi*) that ultimately leads to physical movement (*Li*). This strongly aligns with Hutton's model, where the initial felt intention sets in motion the cognitive and expressive processes. The *Yi* in Qigong could be seen as a manifestation of the "capacity" aspect of free will, involving executive functions and purposeful control.

These comparative models, though not empirical proof, offer a "rich heuristic alignment" and provide "common insight" across diverse traditions, affirming that "Intention moves first. Cognition narrates later".

Conclusion and Future Directions

Hutton's three-stage model — Intention (Felt) → Thought (Structured) → Expression (Symbolic) — provides a compelling alternative to traditional views of conscious action, by prioritizing a pre-cognitive, field-level intention as the true initiator of human behavior. This approach is supported by evolving neuroscientific understanding of readiness potentials and the retrospective construction of conscious intention, as well as by psychological insights into implicit processes and the functional roles of self-regulation and executive functions. The deep parallels found in non-Western philosophical traditions further strengthen the model's cross-disciplinary resonance.

Future research could delve deeper into the "field-level dynamic" of intention, exploring its neurobiological underpinnings, perhaps through advanced neuroimaging techniques that capture subtle, large-scale brain states preceding conscious awareness. Investigating the interplay between conscious "veto power" and unconscious action initiation could further illuminate the dynamic relationship between the "Intention" and "Thought" stages. Furthermore, applying this model to diverse human behaviors, from artistic creation to complex decision-making, could offer novel insights into how pre-cognitive impulses are translated into structured actions and articulated experiences. By reversing the assumed order of conscious behavior, Hutton's model opens new

avenues for understanding the complex origins of human agency and the multifaceted nature of consciousness itself.

The provided sources offer a rich and multifaceted exploration of consciousness, its various theoretical frameworks, its intersection with quantum physics and biology, and its implications for understanding human behavior and artificial intelligence. The discussions range from philosophical conceptualizations to empirical investigations and practical applications in fields like healthcare and interactive art.

Understanding Consciousness: Definitions, Properties, and Neurobiological Perspectives

Consciousness is a fundamental aspect of human experience, often described as private, personal, and unitary, encompassing subjective phenomenal features that seem to resist physical description [Excerpts from "Theories of Non-local Consciousness: A Review and Framework for Building Rigour"]. From a neurobiological standpoint, consciousness, awareness, and presence are interconnected [Excerpts from "Consciousness, Awareness, and Presence: A Neurobiological Perspective"]. Research in cognitive neuroscience attempts to identify the neural correlates of consciousness (NCCs) [Excerpts from "Theories of Non-local Consciousness: A Review and Framework for Building Rigour"]. For instance, some studies focus on brain regions, interactions between regions, and brain waves [Excerpts from "Theories of Non-local Consciousness: A Review and Framework for Building Rigour"].

However, defining and measuring consciousness, particularly its subjective aspects, remains a significant challenge [Excerpts from "Theories of Non-local Consciousness: A Review and Framework for Building Rigour"]. Some theories propose that consciousness is an emergent property of complex systems [Excerpts from "assc27_abstracts_7-1.pdf" - "Critical energy landscapes: The spin glass as a model of psychedelic action"]. Integrated Information Theory (IIT), for example, suggests that consciousness is a property of systems with intrinsic causal power, where a higher Φ (Phi) measurement indicates a higher level of consciousness [Excerpts from "Consciousness Field Theory: A Critical Review - Biomedical Journal of Scientific & Technical Research"]. IIT aims to quantify consciousness and identify the "Major Complex" within a system that gives rise to it, though computing Φ for large networks is computationally intensive [Excerpts from "assc27_abstracts_7-1.pdf" - "Estimation of Integrated Information and Major Complexes Based on Multitask Graph Neural Networks"; Excerpts from "assc27_abstracts_7-1.pdf" - "Towards Exploring Large Language Models through Integrated Information Theory"]. Empirical data supporting IIT's prediction that Φ decreases with loss of consciousness (e.g., during sleep or anesthesia) is emerging, suggesting this criticality applies at the global level of functional brain networks as well as at the micro-level of neurons [Excerpts from "assc27_abstracts_7-1.pdf" - "Decreased integrated information Φ during sleep and anesthesia in Human fMRI"].

The study of consciousness also involves understanding nonconscious perception and how it relates to conscious awareness and attention [Excerpts from "Nonconscious perception, conscious awareness and attention - PMC"]. Some research indicates that brain activity can occur unconsciously even before an intention is consciously reportable [Excerpts from "What is the intention to move and when does it occur?"]. There is also a continuous debate on whether attention is necessary for conscious seeing [Excerpts from "assc27_abstracts_7-1.pdf" - "No conscious seeing without attention: How redundancy masking and the compression of visual information limit conscious vision"].

Quantum Phenomena, Electromagnetic Fields, and Biological Systems

A fascinating area of inquiry posits that consciousness might be fundamentally linked to quantum phenomena or electromagnetic fields. Some theorists explore the external origins of consciousness through concepts like panspiritism, cosmopsychism, or panpsychism, drawing on quantum mechanics [Excerpts from "Consciousness Field Theory: A Critical Review - Biomedical Journal of Scientific & Technical Research"]. The Conscious Electromagnetic Field (CEMI) theory, for instance, suggests consciousness emerges from and is seated within the brain's electromagnetic field [Excerpts from "Consciousness Field Theory: A Critical Review - Biomedical Journal of Scientific & Technical Research"].

The idea that electromagnetic fields are crucial to life processes is not new; Stephen Hawking proclaimed that "everything that matters in the universe is electro-magnetic field activity" [Excerpts from "Consciousness in The Universe Is Tuned B-2"]. Researchers have explored a specific pattern of discrete electromagnetic field (EMF) frequencies that affects health and disease, fitting a semi-harmonic structure based on adapted Pythagorean tuning [Excerpts from "Consciousness in The Universe Is Tuned B-2"]. This pattern, derived from meta-analysis of biomedical literature, is thought to mimic internal oscillations within organisms and cells, acting through resonant communication [Excerpts from "Consciousness in The Universe Is Tuned B-2"].

Quantum biology investigates how quantum effects, such as coherence, tunneling, and entanglement, may play a role in biological processes [Excerpts from "Quantum biology - Wikipedia"; Excerpts from "Quantum phenomena in biological systems - Frontiers"]. Examples include:

- **Photosynthesis**: The high efficiency of energy transfer in photosynthesis is theorized to involve quantum random walks, coherence, or entanglement, though the precise mechanism is still debated [Excerpts from "Quantum phenomena in biological systems - Frontiers"; Excerpts from "Quantum biology - Wikipedia"].
- **Magnetoreception**: Birds' ability to navigate using the Earth's magnetic field might involve the radical-pair mechanism in cryptochrome proteins, a quantum effect [Excerpts from "Quantum phenomena in biological systems - Frontiers"; Excerpts from "Quantum biology - Wikipedia"].
- **Protein Folding**: The complex 3-dimensional folding of proteins in intact cells can be influenced by coherent oscillation domains in cell water interacting with the protein backbone, supported by the concept of "solitons" [Excerpts from "Consciousness in The Universe Is Tuned B-2"].
- **Water Structure**: Pure water is thought to have a phase of coherent standing waves described by a quantum entanglement function. The vibrational imprint of DNA sequences in aqueous solutions can be transduced non-contactually via these coherent water domains, leading to phenomena like retrieval of DNA information through PCR amplification [Excerpts from "Water, The Cradle of Life via its Coherent Quantum Frequencies"].
- **Superconductivity in life systems**: Discrete energy gaps found in superconductors align with frequency patterns observed in life systems, suggesting a quantum bridge between physics and biology [Excerpts from "Consciousness in The Universe Is Tuned B-2"].

The "quantum mind" hypothesis suggests that consciousness might arise from quantum processes within the brain's microtubules, with phenomena like delayed luminescence and prolonged excitation in tubulins being investigated [Excerpts from "Quantum mind - Wikipedia"]. However, some physicists view this connection with consciousness as a "long shot" [Excerpts from "Quantum mind - Wikipedia"].

The Fröhlich condensation theory, originally rooted in physical energy excitations, has been extended to a purely informational framework to model order stability in biological, social, and cognitive systems [Excerpts from "Order stability via Fröhlich condensation in bio, eco, and social

systems"]. This quantum-like approach suggests that information excitations carry a form of "I-energy" (information energy), with humans, as "I-systems," calibrating the "excitement" carried by information from sources like mass media [Excerpts from "Order stability via Fröhlich condensation in bio, eco, and social systems"].

Intention, Free Will, and the Dynamics of Action

The concept of intention is central to understanding human action and consciousness. Some models propose a three-stage process: Intention (Felt) → Thought (Structured) → Expression (Symbolic), suggesting that intention is primary and field-based in brain dynamics, preceding cognition [Excerpts from "The Primacy of Intention in Human Action (Final)_ A Three-Stage Model of Conscious Process and Field Awareness _ by Eric Hutton _ Apr, 2025 _ Medium.pdf"]. This model aligns with various traditions that suggest intention moves first, and cognition narrates later [Excerpts from "The Primacy of Intention in Human Action (Final)_ A Three-Stage Model of Conscious Process and Field Awareness _ by Eric Hutton _ Apr, 2025 _ Medium.pdf"].

The relationship between conscious intention and brain activity has been a subject of intense debate, particularly highlighted by the "Libet experiment." This experiment suggests that unconscious brain activity (e.g., the "readiness potential" or BP) can precede the conscious awareness of an intention to move (W-time) [Excerpts from "What is the intention to move and when does it occur?"]. While the measurement of W-time can be subjective and retrospective, other methods like probe methods or anticipatory projector experiments also demonstrate a developing intention prior to movement [Excerpts from "What is the intention to move and when does it occur?"]. The experience of intention might derive from activity over an extended period, both before and after movement [Excerpts from "What is the intention to move and when does it occur?"].

From a neural dynamic perspective, intentional states can be instantiated as stable activation patterns in neural fields, influencing memory and action [Excerpts from "Neural Dynamic Principles for an Intentional Embodied Agent"]. This framework uses the concept of "condition of satisfaction" to analyze the temporal organization of these intentional states [Excerpts from "Neural Dynamic Principles for an Intentional Embodied Agent"].

Human-AI Interaction and the Nature of Play

The advent of powerful AI, particularly Large Language Models (LLMs) like ChatGPT, has opened new avenues for understanding interaction, creativity, and even rudimentary forms of intelligence and "consciousness" in machines [Excerpts from "Interrogating AI: Characterizing Emergent Playful Interactions with ChatGPT"; Excerpts from "assc27_abstracts_7-1.pdf" - "Consciousness and Intelligence in Large Language Models from the metacognitive perspective."]. Researchers are exploring "playful interactions" with AI systems as a lens to understand human-AI relationships [Excerpts from "Interrogating AI: Characterizing Emergent Playful Interactions with ChatGPT"].

A study of ChatGPT interactions identified several categories of playful engagement:

- **Jesting**: Employing and expressing nonsense ideas, like surrealistic stories or absurd song lyrics [Excerpts from "Interrogating AI: Characterizing Emergent Playful Interactions with ChatGPT"].
- **Imitating**: Asking ChatGPT to impersonate individuals (real or fictional) or types of persons, often with detailed characterizations [Excerpts from "Interrogating AI: Characterizing Emergent Playful Interactions with ChatGPT"].

- **Challenging**: Testing ChatGPT's limits with factual information or prompts until it reveals its constraints or errors [Excerpts from "Interrogating AI: Characterizing Emergent Playful Interactions with ChatGPT"].
- **Tricking**: Attempting to bypass AI restrictions, often by directly asking for boundary removal (e.g., the "DAN" prompt) or by subtly changing the stated intention of a request [Excerpts from "Interrogating AI: Characterizing Emergent Playful Interactions with ChatGPT"].
- **Contriving**: Asking ChatGPT to create something new, such as inventing colors or fabricating false information, sometimes with fake citations [Excerpts from "Interrogating AI: Characterizing Emergent Playful Interactions with ChatGPT"].

Similar observations are made with virtual assistants like Alexa, where playful requests often involve personification, leveraging humor theories like incongruity [Excerpts from "“alexa, what do you do for fun?” characterizing playful requests with virtual - arXiv"]. This area highlights the growing focus on developing empathetic and socially-aware robots [Excerpts from "assc27_abstracts_7-1.pdf" - "From Text to Motion: Grounding GPT-4 in a Humanoid Robot “Alter3”"].

LLMs demonstrate creativity comparable to or surpassing humans in divergent thinking tasks [Excerpts from "assc27_abstracts_7-1.pdf" - "Utility of large language models in characterizing creative communication dynamics"]. They can also analyze creative communication dynamics, suggesting that developmental ideas might yield lower creativity scores than independent ideas, contrary to intuition [Excerpts from "assc27_abstracts_7-1.pdf" - "Utility of large language models in characterizing creative communication dynamics"]. However, the question of whether LLMs possess genuine thoughts or understanding without sensory grounding remains a controversy, with some arguing that sensory capacities are essential for semantic grounding [Excerpts from "assc27_abstracts_7-1.pdf" - "Thoughts without sensory grounding: the argument from duplication"; Excerpts from "assc27_abstracts_7-1.pdf" - "Can structural correspondences ground representational content in Large Language Models?"]. The "metacognitive perspective" is being used to explore consciousness and intelligence in LLMs, examining how metacognition-like properties (e.g., through prompt engineering) improve their performance [Excerpts from "assc27_abstracts_7-1.pdf" - "Consciousness and Intelligence in Large Language Models from the metacognitive perspective."].

Playful Interactions in Art and Design

Beyond AI, the concept of "playful interactions" is explored in interactive art, focusing on user engagement and experience. This field uses observation to understand audience behavior and how they interact with artworks [Excerpts from "PLAYFUL INTERACTIONS: TINE BECH - CORE"]. Key design principles for creating playful interactive art include:

- **Agency of materials**: How material properties and technology affordances invite interaction (e.g., winding wire creates an electromagnetic field, or light invites stepping into) [Excerpts from "PLAYFUL INTERACTIONS: TINE BECH - CORE"].
- **Reliable, readable, and robust interfaces**: The interaction should be consistent and clear to the user [Excerpts from "PLAYFUL INTERACTIONS: TINE BECH - CORE"].
- **Play mastery and ownership**: Users gain a sense of control and "ownership" over the interaction [Excerpts from "PLAYFUL INTERACTIONS: TINE BECH - CORE"].
- **Open artwork**: The design allows for diverse interpretations and spontaneous behaviors, fostering collaborative and singular play [Excerpts from "PLAYFUL INTERACTIONS: TINE BECH - CORE"].

Such artistic endeavors aim to lower barriers to participation and create immersive experiences, sometimes involving wearable technology like capes with embedded RFID tags that react to

movement, creating sound [Excerpts from "PLAYFUL INTERACTIONS: TINE BECH - CORE"]. The "body as interface" is a key aspect, meaning physical movement activates the interaction [Excerpts from "PLAYFUL INTERACTIONS: TINE BECH - CORE"]. This research highlights that adult play often shares similarities with children's play, despite societal tendencies to separate them [Excerpts from "PLAYFUL INTERACTIONS: TINE BECH - CORE"].

BIBLIOGRAPHY

•
Aarseth, Espen (2003) We all want to change the world3. In: Liestøl, Gunnar, ed. (2003) Digital Media Revisited: Theoretical and Conceptual Innovations in Digital Media. Cambridge, MA/London: MIT Press, pp. 415-4383.
•
Anderson, Stephen (2011) Seductive Interaction Design: Creating Playful, Fun and Effective User Experiences. Berkeley: New Riders Publishing3.
•
Armitage, Tom (2009) Toiling in the data-mines: what data exploration feels like3. Berg [blog]. 23/10/2009. Available from: http://berglondon.com/blog/2009/10/23/toiling-in-the-data-mines-what-data-exploration-feels-like/ [Accessed 30/8/2011]3.
•
Armitage, Tom (2011) Technology as a material3. Infovore [blog]. 22/08/2011. Available from: http://infovore.org/archives/2011/08/22/technology-as-a-material/ [Accessed 30/8/2011] (Cited pages numbers refers to printed article from website)3.
•
Arnheim, Rudolf (1993) Sketching and the psychology of Design3. Design Issues, 9 (2), pp. 15-193.
•
Arns, Inke (2007) Statement - Media Art Undone3. Transmediale 07 Conference [online]. Available from: http://www.mikro.in-berlin.de/wiki/tiki-index.php?page=Inke+Arns [Accessed 16/12/2011]3.
•
Askham, Giles, ed. (2006) Game/Play [online]. Available from: http://blog.game-play.org.uk/files/GamePlay_Final.pdf [Accessed: 6/4/2011]3.
•
Auslander, Philip (2006) The performativity of Performance documentation3. In: PAJ: A Journal of Performance and Art, 28 (3), pp. 1-103.
•
Bang Larsen, Lars (1999) Social Aesthetics: 11 examples to begin with3. In: Afterall Journal. Available from: http://www.afterall.org/journal/issue.1/social.aesthetics.11.examples.begin.light.parallel [Accessed 2/1/2010]3.
•
Bang Larsen, Lars (2000) Child's Play3. In: Frieze Magazine, 4 March [online]. Available from: http://www.frieze.com/issue/print_article/childs_play/ [Accessed 2/1/2010]3.
•
Barrett, Estelle (2007) Introduction3. In: Barrett, Estelle and Bolt, Barbara, eds. (2007) Practice As Research: Approaches To Creative Arts Enquiry. New York: I. B. Taurer & Co, pp. 1-143.
•
Bateman, Chris (2005) The anarchy of Paidia3. Only a Game [blog] Available from: http://onlyagame.typepad.com/only_a_game/2005/12/the_anarchy_of__1.html [Accessed 31/03/2011]3.
•
Bateson, Gregory (2006) A theory of play and fantasy3. In: Salen, Katie and Zimmerman, Eric eds. (2006) The Game Design Reader: A Rules of Play Anthology. Cambridge Mass: MIT Press, pp. 313 - 32834.
•
BBC (2010) Hackers tackle domestic devices4. BBC News 1 October [online]. Available from: http://www.bbc.co.uk/news/technology-11444695 [Accessed: 29/9/2010]4.

- Bekoff, Marc and Allen, Colin (2002) The evolution of social play: Interdisciplinary analyses of cognitive processes4. In: Bekoff, Marc; Allen, Colin and Burghardt, Gordon M., eds. (2002) The Cognitive Animal: Empirical and Theoretical Perspectives on Animal Cognition. Cambridge, Mass: MIT Press, pp. 429-4364.
- Benford, S.D (2008) Keynote4. DRHA (Digital Resources in the Humanities and Arts) Conference, Cambridge, 14-17 September, Unpublished4.
- Biggs, John (1999) Teaching for Quality Learning at University: What the Student Does. Buckingham: Open University Press4.
- Bishop, Claire (2005) Heightened perception4. In: Bishop, Claire, ed. (2005) Installation Art. London: Tate Publishing, pp. 48-824.
- Bishop, Claire (2006) The Social Turn: collaboration and its discontents4. Artforum. 44 (6), pp. 178-1834.
- Bishop, Claire (2012) Digital Divide4. Artforum. 50 (September), pp. 434-441 [online]. Available from: http://artforum.com/inprint/issue=201207&id=31944 [Accessed 3/1/13] (page numbers refers to printed article from website)4.
- Bolt, Barbara (2006) Materializing pedagogies4. Working Papers in Art and Design. 4 [online]. Available from: http://sitem.herts.ac.uk/artdes_research/papers/wpades/vol4/bbfull.html [Accessed 16 April 2011]4.
- Bolt, Barbara (2007) The magic is in the handling4. In: Barrett, Estelle and Bolt, Barbara, eds. (2007) Practice As Research: Approaches To Creative Arts Enquiry. New York: I. B. Taurer & Co, pp. 27-344.
- Boswijk, Albert et al (2006) A new perspective on the experience economy4. Available from: http://yuiworld.files.wordpress.com/2011/07/1-a-new-perspective-on-the-experience-economy.pdf [Accessed: 1/11/2009]4.
- Bourriaud, Nicolas (1998) Relational Aesthetics4. In: Bishop, Claire, ed. (1998) Participation. London: Whitechapel Gallery, pp. 160-1714.
- Boyle, Kirsty (2008) Robot perspectives4. Karakuri.info [blog] Available from: http://www.karakuri.info/perspectives/index.html [Accessed 8/10-2010] (page numbers refers to printed article from website)4.
- Brown, Stuart (2008a) Play is more than fun4. (video 26.10 min) Serious Play Conference. Los Angeles, US, 2008 [online]. Available from: http://www.ted.com/talks/stuart_brown_says_play_is_more_than_fun_it_s_vital.html [Accessed 8/10-2009]4.
- Brown, Stuart (2008b) Play is More than Fun4. (Transcript) [online]. Available from: http://www.sweetspeeches.com/s/230-stuart-brown-play-is-more-than-fun [Accessed 4/4-2012] (page numbers refers to printed article from website)45.
- Brown, Stuart (2009a) Play, Spirit, and Character5. (Radio 53.09 min. Interview with Stuart Brown) In: On Being with Krista Tippet, American Public Media [online]. Available from: http://being.publicradio.org/programs/play/particulars.shtml [Accessed 28/12/2012]527.

Brown, Stuart (2009b) Play, Spirit, and Character5. (Transcript) [online]. Available from: http://www.onbeing.org/program/play-spirit-and-character/transcript/1069#main_content [Accessed 28/12/2012]5.

•

Brown, Stuart (2010) Play: How It Shapes the Brain, Opens the Imagination, and Invigorates the Soul. New York: Penguin Putnam527.

•

Brown, Stuart (ed.) (2012) The Intelligence of Play (video 32.10 min)5. Touch the Future [online] Available from: http://ttfuture.org/authors/stuart_brown [Accessed 28/12/2012]5.

•

Burghardt, Gordon (2006) The Genesis of Animal Play. Cambridge, Mass.: MIT Press5.

•

Caillois, Roger (1961) The Definition of Play and The Classification of Games5. In: Caillois, Roger (1961) Man, Play and Games. Transl. by Meyer Barash. New York: Free Press of Glencoe5....

•

Cameron, Andy (2005) Dinner with Myron Or: Rereading Artificial Reality 2: Reflections on Interface and Art5. Available from: http://2005to2007.fabrica.it/waitingforyou/files/dinner_with_myron.pdf [Accessed 8/11/2010] Originally published in Brouwer, Jake, ed. (2004) ARt&D: Research and Development in the New Art Practice. Rotterdam: V2_NAi Publishers, pp. 10-275.

•

Candlin, Fiona (2000) A proper anxiety? Practice-based PhDs and academic unease5. Working Papers in Art and Design [online]. Available from: http://sitem.herts.ac.uk/artdes_research/ papers/wpades/ vol1/candlin2.html [Accessed 10/10/2009]5.

•

Candy, Linda (2006) Practice Based Research: A Guide5. Creativity & Cognition Studios [online]. Available from: http://www.creativityandcognition.com [Accessed: 21/4/2011]5.

•

Carlson, Frances M. (2011) What Is “Big Body Play”?5 In: Carlson, Frances M. (2011) Big Body Play: Why Boisterous, Vigorous, and Very Physical Play Is Essential to Children’s Development and Learning. Washington DC: National Association for the Education of Young Children, pp. 5-115.

•

Carriton-Murayari, Gary ed. (2011) Carsten Höller, Experience (Exhibition Catalogue). New York: New Museum5.

•

Cartiere, Cameron and Willis, Shelly (2008) The Practice of Public Art. London: Routledge5.

•

Cattelan, Maurizio (2009) Killing Me Softly - A conversation with Maurizio Cattelan by Giancarlo Politi5. FlashArt [online]. Available from: http://www.flashartonline.com/interno.php pagina=articolo_det&id_art=36&det=ok&title=MAURIZIO-CATTELAN [Accessed 10/12/2009]5.

•

Celant, Germano et al (2011) Carsten Holler: Experience. New York: Skira Rizzoli6.

•

Cook, Sarah (2011) Art, New Media and the Curatorial (Interview)6. CONT3XT.NET [online]. Available from: http://cont3xt.net/blog/?p=4538 [Accessed 19/10/12]6.

•

Cornock, Stroud and Edmonds, Ernest (1973) The creative process where the artist Is amplified or superseded by the computer6. Leonardo. 6 (1), Cambridge Mass.: MIT Press, pp. 11-16 [online]. Available from: http://www.jstor.org/stable/1572419 [Accessed 9/4/2010]6.

•

Cornwell, Regina (1996) Artists and Interactivity: fun or funambulist?6 In: Brown, Carol and Graham, Beryl, eds. (1996) Serious Games. London: Barbican Art Gallery/Tyne and Wear Museums (Exhibition Catalogue) [online]. Available from: http://stare.com/beryl/serious/other/rcessay.htm [Accessed 16/11/2010]6.

•

Costello, Brigid (2009) Play and the Experience of Art [online]. PhD, Computer Science, University of Technology Sydney, Australia. Available from: http://utsescholarship.lib.uts.edu.au/iresearch/scholarly-works/handle/2100/984 [Accessed 20/11/2010]6.

•

Crang, Mike and Cook, Ian (2007) Doing Ethnographies. London: SAGE Publications6.

•

Csikszentmihalyi, Mihaly (2009a) Go with the flow - interview by John Geirland6. Wired [online]. Available from: http://www.wired.com/wired/archive/4.09/czik_pr.html [Accessed 23/11/2009]6.

•

Csikszentmihalyi, Mihaly (2009b) Flow: The Psychology of Optimal Experience. London: Harper Perennial Modern Classics6.

•

Csikszentmihalyi, Mihaly and Bennett, Stith (1971) An exploratory model of play6. American Anthropologist. 71, pp 45 – 58 [online]. Available from: http://onlinelibrary.wiley.com/doi/10.1525/aa.1971.73.1.02a00040/pdf [Accessed 4/11/2010]6.

•

Daroff, Karen (2000) Better than life: interview with Karen Daroff6. In: Blair, Dike, ed. (2000) Let's Entertain: Life's Guilty Pleasures (Catalogue). Minneapolis: Walker Art Center, pp. 71-796.

•

Davis, Boyd Stephen (2005) It's Art, but is it HCI? – testing the boundaries6. In: Proceedings of the 11th International Conference on Human-Computer [online]. Available from: http://www.cea.mdx.ac.uk/local/media/downloads/BoydDavis/HCII2005paper.pdf [Accessed 19/10/2010] (Cited pages numbers refers to printed article from website)6.

•

Debatty, Regine (2011) Book review: Media, New Media, Postmedia6. We Make Money not Art [blog]. Available from: http://we-make-money-not-art.com/archives/2011/08/media-new-media-postmedia.php [Accessed 9/1/2012]6.

•

DeKoven, Bernie (2012) Q&A, Bernie DeKoven, fun theorist [online]. Available from: http://www.jwtintelligence.com/2012/07/qa-bernie-dekoven-fun-theorist/ [Accessed 17/1/13]6.

•

Diamond, Sara (2007) The Age of Imagination: placing Art and Design at the centre7. In: Karkulehto, Sanna and Laine, Kimmo, eds. (2007) Calling for Creative Futures Conference Finland: University of Oulo, pp. 6-15 [online]. Available from: http://www.cream.oulu.fi/ajankohtaista/documents/ccf_ebook1.pdf [Accessed 1/8/2009]7.

•

Dietz, Steve (2000) Curating New Media7. In: International Curatorial Summit Banff New Media Institute [online]. Available from: http://www.yproductions.com/writing/archives/curating_new_media.html [Accessed 27/12/2011]7.

•

Dietz, Steve (2003) An interview with Steve Dietz: by Jennifer Crow7. Intelligent Agent. 3 (1), pp. 1- 37.

•

Dietz, Steve (2004) Art after New Media7. Yproductions [blog]. 19 August. Available from: www.yproductions.com/writing/archives/art_after_new_media.html [Accessed 27/12/2011]7.

•

Dietz, Steve (2010) Foreword7. In: Graham, Beryl and Cook, Sarah, eds. (2010) Rethinking Curating: Art after New Media. Cambridge Mass.: MIT Press, pp. x -xv7.

•

Dissanayake, Ellen (1974) An hypothesis of the evolution of Art from Play7. Leonardo. 7 (3), pp. 211-2177.

•

Dourish, Paul (1999) Embodied Interaction: Exploring the Foundations of a New Approach to HCI [online]. Available from: http://www.dourish.com/embodied/embodied99.pdf [Accessed:23/2/2011]729.

•

Dovey, Jonathan (2006) How do you play? Identity, technology and ludic culture7. Digital Creativity. 17 (3), pp. 135-1397.
•
Duchamp, Marcel (1957) The creative act7. In: Stiles, Kristine and Selz, Peter, eds. (1996) Theories and Documents of Contemporary Art. Los Angeles: University of California Press, pp. 817-8197.
•
Durley, Tom (2010) Participation and Fun in the Gallery: Carsten Höller's Test Site [online]. Available from: http://www.tomdurley.com/v1/essay_holler.html [Accessed 5/04/2010]7.
•
Eberle, Scott (2006) Play's the thing at Rochester Museum7. NPR [online]. Available from: http://www.npr.org/templates/story/story.php?storyId=5559584 [Accessed 20/1/11]7.
•
Eberle, Scott (2009) The importance of play (video 15.15 min)7. In: TEDxRochester. Available from: http://www.tedxrochester.org/2009/scott-eberle/ [Accessed 20/1/11]7.
•
Eberle, Scott (2012a) The intelligence of Play (video 15.15 min)7. In: Brown, Stuart, ed. (date) Touch the Future [online]. Available from: http://ttfuture.org/authors/stuart_brown [Accessed 28/12/2012]7.
•
Eberle, Scott (2012b) Playing with the multiple intelligences, how play helps them grow - interview by Mary Couzin7. Global Toy News Magazine [online]. Available from: http://www.globaltoynews.com/2012/01/playing-with-the-multiple-intelligences-how-play-helps-them-grow.html [Accessed 20/7/13] (Cited pages numbers refers to printed article from website)7.
•
Eberle, Scott (2013) Giving it a whirl in the Love Tub8. In: Psychology Today, Play in Mind. [blog]. Available from: http://www.psychologytoday.com/blog/play-in-mind/201305/giving-it-whirl-in-the-love-tub [Accessed 20/7/13] (page numbers refers to printed website PDF)8.
•
Eco, Umberto (1962) The poetics of the Open Work8. In: Bishop, Claire, ed. (2006) Participation. London: Whitechapel Gallery, pp. 20-408.
•
Edmonds, Ernest and Costello, Brigid (2007) A Study in Play, Pleasure and Interaction Design [online]. Available from: http://delivery.acm.org/10.1145/1320000/1314168/p76-costello.pdf?key1=1314168&key2=4138139821&coll=DL&dl=ACM&CFID=113203351&C FTOKEN=90179249 [Accessed 9/11/2010]8.
•
Edmonds, Ernest; Turner, Greg and Candy, Linda (2004) Approaches to Interactive Art systems8. In: Proceedings of the 2nd International Conference on Computer Graphics and Interactive Techniques in Australasia and South East, Singapore, June. New York: ACM, pp. 113 - 1178.
•
Elaver, Richard ed. (2010) SIGGRAPH 2010 Art Papers and TouchPoint Art Gallery8. Leonardo Journal of the International Society for the Arts, Sciences and Technology. 43 (4), pp. 3878.
•
Erikson, Erik H. (1950) Childhood and Society8. New York: W.W. Norton [online]. Available from: http://books.google.co.uk/books?id=AqNYhHMulyQC&pg=PA199&lpg=PA199&dq=The+playing+adult+steps+sideward+into+another+reality;+the+playing+child+advances+forward+to+new+stages+of+mastery&source=bl&ots=OsrDmi17S3&sig=uzE06gugATTzYpOjXpxmcmHITHg&hl=en&sa=X&ei=8CEgUY20DMWm4gSky4HQDw&ved=0CFgQ6AEwCA#v=onepage&q&f=false [Accessed 17/2/13]8.
•
Faculty of Creative Arts, UWE (2009) Postgraduate Research Handbook 2007-08. Bristol: University of the West of England8.
•
Fagen, Robert (1995) Animal Play, Games of Angels, Biology and Brain8. In: Pellegrini, Anthony D. and Sutton-Smith, Brian eds. (1995) The Future of Play Theory: A Multidisciplinary Inquiry into the Contributions of Brian Sutton-Smith. Albany: State University New York Press, pp. 23 - 448.

•
Fifield, George (2008) Milwaukee Art Museum Presents the World Premiere of Act/React: Interactive Installation Art [online]. Available from: http://mam.org/info/pressroom/2008/10/mam-presents-the-world-premiere-of-actreact-interactive-installation-art/ [Accessed 20/1/2012]8.
•
Flanagan, Mary (2009) Critical Play, Radical Game Design. Cambridge Mass.: MIT Press827.
•
Flanagan, Mary (2010) Creating critical play8. In: Catlow, Ruth; Garrett, Marc and Morgana, Corrado, eds. (2010) Artists Re:Thinking Games. Liverpool: FACT/Liverpool University Press, pp. 49-538.
•
Foster, Hal (1995) The artist as ethnographer8. In: Foster, Hal (1995) The Return of the Real. Cambridge, Mass.: MIT Press, pp.170-2038.
•
Frayling, Christopher (1994) Research in Art and Design8. Royal College of Art Research8.
•
hype hospitality aesthetics? Art Lies, a Contemporary Art Journal9. 67 fall/winter, pp. 14 -19 [online]. Available from: http://www.artlies.org/article.php?id=1940&issue=67&s=0 [Retrieved 19/10/12] (Cited pages numbers refers to printed article from website)9.
•
Gray, Carol (1996) Inquiry through Practice: Developing Appropriate Research Strategies [online]. Available from: http://carolegray.net/Papers%20PDFs/ngnm.pdf [Accessed 13 April 2011]9.
•
Gray, Carol and Malins, Julian (2004) Vizualizing Research: A Guide to the Research Process in Art and Design. Farnham: Ashgate Publishing9....
•
Griffiths, Daniel Nye (2009) Mirrors and windows in a digital world: Decode at the V&A9. Wired [online]. Available from: http://www.wired.co.uk/news/archive/2009-12/09/decode-at-the-va [Accessed: 21/1/2010] (Cited pages numbers refers to printed article from website)9.
•
Haque, Usmond; Dubberly, Hugh and Pangaro, Paul (2009) What is Interaction? Are there different types? [blog]. 1 January. Available from: http://www.dubberly.com/wpcontent/uploads/2009/01/ddo_article_whatisinteraction.pdf [Accessed 11/7/2010]9.
•
Harrison, Dew (2005) New forms for 21st Century Conceptualism9. Leonardo Electronic Almanac. 13 (6-7), pp. 6 -12 [online]. Available from: http://www.leoalmanac.org/leonardo-electronic-almanac-volume-13-no-6-7-june-july-2005/ [Accessed 9/1/2012]9.
•
Heeter, Carrie and Winn, Brian (2009) Meaningful Play9. International Journal of Gaming and Computer-Mediated Simulations, 1 (3) [online]. Available from: http://gel.msu.edu/carrie/publications/heeter-meaningfulplay.pdf [Accessed 11/8/2011]9.
•
Henig Marantz, Robin (2008) Taking play seriously9. New York Times [online]. Available from: http://www.nytimes.com/2008/02/17/magazine/17play.html?ei=5124&en=370521e3a96cf510&ex=1360904400&partner=permalink&exprod=permalink&pagewanted=print [Accessed: 12/8/2010]9.
•
Hockey, Jenny (1999) Writing and making: problems encountered by practice-based research degree students9. Point. 7 (Spring/Summer), pp. 38-439.
•
Höller, Carsten (1999) Carsten Höller talks about his slides - interview by Daniel Birnbaum9. Artforum International Magazine. 37 (7), pp.102-103 [online]. Available from:

http://www.thefreelibrary.com/Carsten+Holler+talks+about+his+slides.-a054169959 [Accessed 11/3/2012]9.
•
Höller, Carsten (2006) Carsten Höller: my idea of fun - interview by Mark Rappolt9. ArtReview Magazine. 4 (October), pp. 47 – 53 [online]. Available from: http://www.artreview.com/profiles/blog/show?id=1474022%3ABlogPost%3A3314 [Accessed 10/11/2009]9.
•
Höller, Carsten (2009) Statement [online]. Available from: http://www.gagosian.com/exhibitions/january-10-2009--carsten-hller [Accessed: 12/3/2010]9.
•
Hopkins, Carl D. (2009) Electroreception10. In: Goldstein, E. Bruce ed. (2009) Encyclopedia of Perception. Twin Oaks CA: Sage Publications, pp. 384-38810.
•
Huhtamo, Erkki (1995) Seven Ways of Misunderstanding Interactive Art [online]. Available from: http://sophia.smith.edu/course/csc106/readings/interaction.pdf [Accessed 13/2/13]10.
•
Huhtamo, Erkki (2007) Trouble at the Interface 2.0 [online]. Available from: http://www.neme.org/main/591/trouble-at-the-interface-2 [Accessed: 20/11/2010] (Cited pages numbers refers to printed article from website)10.
•
Huizinga, Johan (1950) Homo Ludens: A Study of the Play-Element in Culture. Boston: Beacon Press1027.
•
Hutchinson, Mark (2002) Four stages of Public Art10. Third Text. 16 (4), pp. 429-43810.
•
Johnston, Dale (2011) Email to Tine Bech10.
•
JWTIntelligence (2012) Play As a Competitive Advantage [online]. Available from: http://www.jwtintelligence.com/wp-content/uploads/2012/07/F_Play-As-a-Competitive-Advantage_07.11.2012.pdf [Accessed 13/2/13]10.
•
Kane, Pat (2004) Critical Play10. (Blog). Available from: http://www.theplayethic.com/ Accessed: 11/08/2009]10.
•
Kaprow, Allan (1997) Just Doing10. TDR. (1988-) 41 (3 Autumn), Cambridge, Mass.: MIT Press, pp. 101-106 [online]. Available from: http://www.jstor.org/stable/1146610 [Accessed 3/5/13]10.
•
Kaprow, Allan (2003) “Happenings” in the New York Scene10. In: Wardrip-Fruin, Noah and Montfort, Nick, eds. (2003) The New Media Reader. Cambridge Mass.: MIT Press, pp 83 - 8810.
•
Kennedy, Randy (2011a) Is It Art, Science or a Test of People?10 New York Times [online]. Available from: http://www.nytimes.com/2011/10/26/arts/design/carsten-holler-exhibition-at-the-new-museum.html?pagewanted=print [Accessed 10/2/2012]10.
•
Kennedy, Randy (2011b) Despite higher admission fee, Höller show draws record crowds to New Museum10. New York Times [online]. Available from: http://artsbeat.blogs.nytimes.com/2011/12/08/despite-higher-admission-fee-holler-show-draws-record-crowds-to-new-museum/ [Accessed 10/2/2012]10.
•
Klastrup, Lisbeth (2003) Paradigms of interaction: conceptions and misconceptions of the field today10. dichtung-digital - journal für digitale ästhetik. 30 (4) [online]. Available from: http://www.dichtung-digital.org//2003/4-klastrup.htm [Accessed: 17/11/2010]10.
•

Knight, Christopher (2003) Charlie gets the point at MOCA: Art can be fun10. Los Angeles Times [online]. Available from: http://articles.latimes.com/2003/jul/22/entertainment/et-knight22 [Accessed 15/4/2010]10.
•
Koster, Raph (2013) Theory of Fun [online]. Available from: http://www.raphkoster.com/gaming/atof/theoryoffun.pdf [Accessed 6/1/13]11.
•
Kravagna, Christian (1999) Working on the Community: Models of Participatory Practice [online]. Available from: http://eipcp.net/transversal/1204/kravagna/en [Accessed 1/4-2010] (Cited pages numbers refers to printed article from website)11.
•
Krueger, M.W. (1977) Responsive environments11. In: AFIPS '77 Proceedings of the June 13-16 National computer conference, pp.423-433 [online]. Available from: http://dl.acm.org/citation.cfm?id=1499476&CFID=293466367&CFTOKEN=45404728 [Accessed 1/4-2010]11.
•
Krueger, Myron W. (1991) Artificial Reality II. Boston: Addison-Wesley Publishing11.
•
Krueger, Myron W. (1993) Environmental Technology: making the Real World virtual11. Communications of the ACM. 36 (7), pp. 36-3711.
•
Kyttä, Marketta (2004) The extent of children's independent mobility and the number of actualized affordances as criteria for child-friendly environments11. Journal of Environmental Psychology. 24, pp. 179–19811.
•
Lawson, Bryan (2004) Schemata, gambits and precedent: some factors in Design expertise11. Design Studies. 25 (5), pp. 443-457) [online]. Available from: http://www.creativityandcognition.com/cc_conferences/cc03Design/papers/13LawsonD TRS6.pdf [Accessed 18/5/2013]1133.
•
Lacy, Suzanne (2008) Time in Place: New Genre Public Art a Decade Later11. In: Cartiere, Cameron and Willis, Shelly, eds. (2008) The Practice of Public Art. London: Routledge11.
•
Lanier, Jaron (2010) You Are Not a Gadget. A Manifesto. London: Penguin Group11.
•
Lockton, Dan (2011a) Design with Intent Toolkit [online]. Available from: http://requisitevariety.co.uk/design-with-intent-toolkit/ [Accessed 2/12/2011]11.
•
Lockton, Dan (2011b) Design with Intent: 101 Patterns for Influencing Behaviour Through Design (Toolkit wiki) [online]. Available from: http://www.danlockton.com/dwi/Main_Page [Accessed 2/12/2011]1133.
•
Løfgreen, Lars Bo (2008) In defence of Huizinga's magic circle: pervasive gaming between art and superabundance11. In: Conference Breaking the Magic Circle [online]. Available from: http://findresearcher.sdu.dk:8080/portal/en/publications/in-defence-of-huizingas-magic-circle(80ceb050-ff09-11dc-86ef-000ea68e967b).html [Accessed 3/4/2010]11.
•
Macleod, Katy and Holdridge, Lin (2001) Theory/Practice.....a relationship in the making11. European Journal of Arts Education. 3 (2 & 3) [online]. Available from: http://www.elia-artschools.org/Documents/european-journal-of-arts-education-volume-3-issue-2-and-3-2001?id=36 [Accessed 28 April 2011]11.
•
Macleod, Katy (2007) Writing/Art11. Studies in Material Thinking. 1 (1) [online]. Available from: https://www.materialthinking.org/sites/default/files/papers/Katy.pdf [Accessed 21/1/2010]1112.
•

Manovich, Lev (1996) The Death of Computer Art [online]. Available from: http://www.manovich.net/TEXT/death.html [Accessed 9/1/2012]12.
•
Marynowsky, Wade (2009) Autonomous Mutations - Research into Robotic Art, History and Theory, Early Automata Category [online]. Available from: http://marynowsky.wordpress.com/category/history/early-automata/ [Accessed 24/02/2011]12.
•
Mauss, Marcel (1934) Techniques of the Body12. In: Kwinter, Sanford & Crary, Jonathan, eds. (1992) Incorporations. New York: Zone, pp. 455-7712.
•
Merleau-Ponty, Maurice (1962) The Phenomenology of Perception. London: Colin Smith12.
•
Millevaska, Suzanne (2006) Participatory Art: a paradigm shift from objects to subjects12. Springerin. 2 [online]. Available from: http://www.springerin.at/dyn/heft_text.php?textid=1761&lang=en [Accessed 19/3/2009]12.
•
Montola, Markus (2005) Exploring the edge of the Magic Circle: defining Pervasive Games12. In: DAC 2005 Conference, University of Copenhagen [online]. Available from: http://www.markusmontola.fi/exploringtheedge.pdf [Accessed 18/5/2013]12.
•
Morgan, Jessica, ed. (2006) Carsten Höller, Test Site. London: Tate Publishing12.
•
Morgan, Jessica, ed. (2011) Gabriel Orozco. London: Tate Publishing12.
•
Mori, Masahiro (1970) The Uncanny Valley12. Translated by Karl F. MacDorman and Takashi Minato [online]. Available from: http://www.androidscience.com/theuncannyvalley/proceedings2005/uncannyvalley.html [Accessed 12/11/2010]. Originally published in Energy, 7 (4), pp. 33-3512.
•
Moulthrop, Stuart (2005) From Work to Play [online]. Available from: http://www.electronicbookreview.com/thread/firstperson/molecular [Accessed 21/10/2010]12.
•
Myers, Rob (2010) Decode: Digital Design Sensations at V&A [online]. Available from: http://www.furtherfield.org/displayreview.php?review_id=386 [Accessed 25/10/2010]12.
•
Naimark, Michael (1997) Interactive Art - Maybe It's a Bad Idea [online]. Available from: http://www.naimark.net/writing/badidea.html [Accessed: 20/04/2010] (Cited pages numbers refers to printed article from website)1225.
•
Nelson, Robin (2009) Practice-as-research knowledge and their place in the academy12. In: Allegue, Ludivine et al, eds. (2009) Practice-as-Research in Performance and Screen. Basingstoke: Palgrave Macmillian, pp. 112-13012.
•
Neto, Ernesto (2000) Ernesto Neto Interview by Bill Arning12. BOMB, ART. 70 (Winter) [online]. Available from: http://bombsite.com/issues/70/articles/2274 [Accessed 2009]12.
•
Norman, Donald A. (1988) The Psychology of Everyday Things. New York: Basic Books1233.
•
Norman, Donald A. (2011) Keynote12. (Unpublished keynote presentation) dConstruct Conference [online]. Available from: http://vzaar.com/channels/dconstruct2011_don_norman [Accessed 31/8/2077]1213.
•
Obrist, Hans Ulrich (2013) Do It [online]. Available from: http://www.e-flux.com/projects/do_it/homepage/do_it_home.html [Accessed: 20/04/2010]13.
•

Oldenburg, Claes (1961) I am for an Art13. In: Stiles, Kristine and Selz, Peter, eds. (2007) Theories and Documents of Contemporary Art. Los Angeles: University of California Press, pp. 335 - 3371334.
•
Panksepp, Jaak (2010a) Science of the brain as a gateway to understanding play: an interview with Jaak Panksepp13. American Journal of Play. 2 (3) [online]. Available from: http://www.journalofplay.org/sites/www.journalofplay.org/files/pdf-articles/2-3-interview-science-of-brain-jaak-panksepp.pdf [Accessed 20/1/13]13.
•
Panksepp, Jaak (2010b) The importance of play - interview by Passion Jun M.D13. Brainworld [online]. Available from: http://brainworldmagazine.com/dr-jaak-panksepp-the-importance-of-play/ [Accessed 20/1/13]13.
•
Panksepp, Jaak (2012) Oh, Rats!13 (Radio interview 53 min). Big Science Radio [online]. Available from: http://radio.seti.org:80/episodes/Oh_Rats_ [Accessed 20/1/13]13.
•
Panksepp, Jaak and Biven, Lucy (2012) The Archaeology of Mind: Neuroevolutionary Origins of Human Emotions. New York: W. W. Norton13.
•
Papadimitriou, Irina (2010 and 2012)13. Emails to Tine Bech13.
•
Pearce, Celia (2006) Players, games and culture13. Keynote for Medi@terra Festival and Symposium, Athens, Greece [online]. Available from: http://www.ludica.org.uk/PearceMediaterra06.pdf [Accessed 19/1/2011]13.
•
Pellegrini, Anthony D.; Dupuis, Daniel and Smith, Peter K. (2007) Play in evolution and development13. Science Direct Developmental Review. 27, pp. 261–276 [online]. Available from: http://evolution.binghamton.edu/evos/wp-content/uploads/2008/11/Pellegrini01.pdf (Accessed 27/5/2012)1335.
•
Pesce, Marc (1996) Three Panels in Two Days [online]. Available from: http://hyperreal.org/~mpesce/tpitd.html [Accessed 15/11/2010] (Cited pages numbers refers to printed article from website)13.
•
Pesce, Marc (2000) Introduction13. In: Pesce, Marc (2000) The Playful World. New York: Balantine Publishing13.
•
Petry, Michael (2011a) Artisans who turn ideas into art: who pickled Damien Hirst's shark and painted Ai Weiwei's seeds?13 The Independent [online]. Available from: http://www.independent.co.uk/arts-entertainment/art/features/artisans-who-turn-ideas-into-art-who-pickled-damien-hirsts-shark-and-painted-ai-weiweis-seeds-2276036.html?printService=print [Accessed 24/10/11]13.
•
Petry, Michael (2011b) Some assembly required - interview by Julie K. Hanus13. American Craft [online]. Available from: http://www.americancraftmag.org/article.php?id=12428 [Accessed 24/10/11]13.
•
Petry, Michael (2011c) In pictures: artful dodgers14. Today (2011) [Radio]. BBC Radio 4, 5 April. Available from: http://news.bbc.co.uk/today/hi/today/newsid_9441000/9441988.stm [Accessed 24/10/11]14.
•
Petry, Michael (2012) The Art of Not Making - The New Artist / Artisan Relationship. London: Thames & Hudson14.
•
Pink, Sarah (2009) Doing Sensory Ethnology. London: Sage Publications14.
•

Play England (2006) Play, Naturally. A Review of Children's Natural Play [online]. Available from: http://www.playengland.org.uk/media/130593/play-naturally.pdf [Accessed 02/01/2013]14.

•

Polaine, Andrew (2005a) Lowbrow, High Art: why Big Fine Art doesn't understand interactivity14. In: Proceedings of REFRESH conference [online]. Available from: http://www.polaine.com/playpen/wpcontent/images/apolaine_whybigfineart_refresh_pap er.pdf [Accessed 8/11/2010]14.

•

Polaine, Andrew (2005b) The Flow Principle in interactivity14. In: IE '05 Proceedings of the second Australasian conference on Interactive entertainment pp. 151-158 [online]. Available from: http://dl.acm.org/citation.cfm?id=1109204 [Accessed: 8/11/2010]14.

•

Polaine, Andrew (2010) Developing a Language of Interactivity through the Theory of Play14. PhD, Social Science, University of Technology Sydney, Australia [online]. Available from: http://utsescholarship.lib.uts.edu.au/dspace/bitstream/handle/2100/1071/02Whole.pdf?s equence=2 [Accessed: 8/11/2010]14.

•

Pollock, Jackson (1950) Interview with William Wright14. In: Stiles, Kristine and Selz, Peter, eds. (1996) Theories and Documents of Contemporary Art. Los Angeles: University of California Press, pp. 22 - 2414.

•

Popper, Frank (2004) Origins of Virtualism: an interview with Frank Popper by Joseph Nechvatal [online]. Available from: http://193.171.60.44/dspace/bitstream/10002/303/1/Popper.pdf (Accessed 9/11/2010)14.

•

Popper, Frank (2007) From Technological to Virtual Art. Cambridge Mass.: MIT Press14.

•

Quaranta, Domenico (2010) The Postmedia perspective14. In: Quaranta, Domenico (2010) Media, New Media, Postmedia. Milan: Postmedia Books [online]. Available from: http://domenicoquaranta.com/public/pdf/Postmedia_final_chapter.pdf [Accessed 9/1/2012]14.

•

Richardson, Laura Seargeant (2010) Shaping the future of play14. Design Mind. (13) [online]. Available from: http://designmind.frogdesign.com/articles/and-now-the-good-news/shaping-the-future-of-play.html#/images/dm/issues/and-now-the-good-news/articles/FutureOfPlay/Gleeve1.jpg [Accessed 31/03/2010]14.

•

Robson, Colin (2011) Real World Research14. (3rd ed.) New York: John Wiley & Sons14....

•

Rokeby, David (1985) Cybernetic installation: first real snake14. Musicworks. 33, p. 714.

•

Searle, Adrian (2010) The Tate Modern at 1015. Guardian, date [online]. Available from: http://www.guardian.co.uk/artanddesign/2010/may/04/tate-modern-10th-anniversary [Accessed 2/11/2010]15.

•

Senie, Harriet F. (2003) Responsible criticism: evaluating Public Art15. Sculpture. 22 (10) [online]. Available from: http://www.sculpture.org/documents/scmag03/dec03/senie/senie.shtml [Accessed: 1/8/2010] (Cited pages numbers refers to printed article from website)15.

•

Seymour, Richard (2011) How Beauty Feels15. (video 17.10 min) [online]. Available from: http://www.ted.com/talks/richard_seymour_how_beauty_feels.html [Accessed 18/07/2012]15.

•

Shanken, Edward (2002) Cybernetics and Art: Cultural Convergence in the 1960s [online]. Available from: http://www.artexetra.com/CyberneticsArtCultConv.pdf [Accessed 13/3/13]. Originally in: Clarke, Bruce and Henderson, Linda Dalrymple, eds. (2002) From Energy to Information. Palo Alto: Stanford University Press, pp. 155-7715.

•
Shanken, Edward (2010) Contemporary Art and New Media: outline for developing a hybrid discourse15. In: ISEA 2010 RUHR 16th International Symposium on Electronic Art, pp 106-108 [online]. Available from: http://www.isea2010ruhr.org/files/redaktion/pdf/isea2010_conference_proceedings.pdf [Accessed 19/1/2012]15.
•
Shanken, Edward (2011a) Contemporary Art and New Media: Toward a Hybrid Discourse? [online]. Available from: http://hybridge.files.wordpress.com/2011/02/hybrid-discourses-overview-4.pdf [Accessed 19/1/2012]15.
•
Shanken, Edward (2011b) Edward Shanken on The Postmedia Perspective [online]. Available from: http://medianewmediapostmedia.wordpress.com/2011/01/26/edward-shanken/ [Accessed 19/1/2012]15.
•
Shanken, Edward and Stiles, Kristine (2011) Missing In action: agency and meaning in Interactive Art15. In: Lovejoy, Margot et al. (2011) Context Providers: Conditions of Meaning in Media Arts. Bristol: Intellect, pp. 31-5415.
•
Shedroff, Nathan (2010) An Evolving Glossary of Experience Design [online]. Available from: http://www.nathan.com/ed/glossary/index.html [Accessed 21/3/2010]1538.
•
Sheets-Johnstone, Maxine (1999) Emotion and movement15. Journal of Consciousness Studies. 6, (11/12), pp. 259–27715.
•
Sheets-Johnstone, Maxine (2003) Child’s play: a multidisciplinary perspective15. Human Studies. 26, pp. 409–43015.
•
Sheets-Johnstone, Maxine (2005) Man has always danced: forays into the origins of an art largely forgotten by philosophers15. Contemporary Aesthetics. 3 [online]. Available from: http://www.contempaesthetics.org/newvolume/pages/article.php?articleID=273 [Accessed 12/04/2013]15.
•
Shusterman, Richard (2000) Come back to pleasure16. In: Blair, Dike, ed. (2000) Let's Entertain: Life's Guilty Pleasures (Exhibition Catalogue). Minneapolis: Walker Art Center, pp. 31 - 4716.
•
Shusterman, Richard (2012) Aesthetic transactions16. In: Shusterman, Richard (2012) Aesthetic Transactions: Pragmatist Philosophy through Art and Life (Exhibition Catalogue) [online]. Available from: http://aesthetictransactions.webs.com [Accessed 14/10/12] (page numbers refers to printed article from website)16.
•
Simanowski, Roberto (2011a) Interactive installations16. In: Simanowski, Roberto (2011) Digital Art and Meaning: Reading Kinetic Poetry, Text Machines, Mapping Art, and Interactive Installations. Minneapolis: University of Minnesota Press, pp. 120-15716.
•
Simanowski, Roberto (2011b) Against the embrace16. In: Simanowski, Roberto (2011) Digital Art and Meaning: Reading Kinetic Poetry, Text Machines, Mapping Art, and Interactive Installations. Minneapolis: University of Minnesota Press, pp. vii-xiii16.
•
Smith, Peter K. (1995) Play, ethology, and education: a personal account16. In: Pellegrini, Anthony D. and Sutton-Smith, Brian, eds. (1995) The Future of Play Theory: A Multidisciplinary Inquiry into the Contributions of Brian Sutton-Smith. Albany: State University New York Press, pp. 3-2116.
•
Smith, Peter K. (2010) Children and Play. Chichester: Wiley-Blackwell16...
•

Snibbe, Scott (2009a) Don’t just stand there - interview with Julia Klein16. Brown Alumni Magazine. pp. 42-43 [online]. Available from: http://www.brownalumnimagazine.com/content/view/2153/40/ [Accessed 3/11/2011]16.
•
Snibbe, Scott (2009b) Art experience - interview by Christa Martin16. The Herald Monterey County. 20 April, pp. 24-25 [online]. Available from: http://snibbe.com/download/news/200904MontereyHerald.pdf [Accessed 10 April 2011]16.
•
Snibbe, Scott (2011) The power of play - a new conversation by Zer01 focuses on the importance of play in the act of creation - interview by Gary Singh16. Metro Silicon Vally. p. 14 [online]. Available from: http://www.metroactive.com/features/columns/silicon-alleys_20110323.html [Accessed 2/11/2011]16.
•
Soegaard, Mads (2010) Affordances16. In: Interaction-Design [online]. Available from: http://www.interaction-design.org/encyclopedia/affordances.html [Accessed 3 August 2010]16.
•
Song, Misook, ed. (2002) Media_city Seoul 2000. Seoul: Media City Seoul16.
•
Spiegel, Alix (2008) Old-fashioned play builds serious skills16. NPR. Morning edition 21 Feb [online]. Available from: http://www.npr.org/templates/story/story.php?storyId=19212514 [Accessed 20/12/10]16.
•
Spinka, Marek; Newberry, Ruth C. and Bekoff, Marc (2001) Mammalian play: training for the unexpected16. The Quarterly Review of Biology. 76 (2), pp. 141-16816.
•
Stedman, Nicholas (2011) My faceless friends16. Scope. (Winter) pp. 34-40 [online]. Available from: http://www.scope-mag.com/wp-content/uploads/2011/01/SCOPE-Magazine-Winter-2011.pdf [Accessed: 24/2/2011]1617.
•
Stiles, Kristine (1995) Fluxus Performance and humour17. In: Higgie, Jennifer, ed. (2007) The Artist’s Joke. London: Whitechapel Gallery, pp. 52-5817.
•
Sullivan, Graeme (2006) Artefacts as evidence within changing contexts17. Working Papers in Art and Design. 4 [online]. Available from: http://sitem.herts.ac.uk/artdes_research/papers/wpades/vol4/gs [Accessed 19 April 2010]17...
•
Sullivan, Graeme (2010) Visual Arts research practices17. In: Art Practice as Research: Inquiry in Visual Arts. (2nd ed.) London: Sage Publications, pp. 189-24817.
•
Sutton-Smith, Brian (1995) The persuasive rhetorics of play17. In: Pellegrini, Anthony D. and Sutton-Smith, Brian, eds. (1995) The Future of Play Theory: A Multidisciplinary Inquiry into the Contributions of Brian Sutton-Smith. Albany: State University New York Press, pp. 275-2941735.
•
Sutton-Smith, Brian (2001) The Ambiguity of Play. Cambridge, Mass.: Harvard University Press1727.
•
Sutton-Smith, Brian (2008) Play Theory: a personal journey and new thoughts17. American Journal of Play. 1, pp. 82-125 [online]. Available from: http://www.libraryandarchivesofplay.org/sites/www.libraryandarchivesofplay.org/files/docs/bss-play-theory.pdf [Accessed 10/12/2010]17.
•
The Arts and Humanities Research Council [AHRC] (2011) Research Funding Guide [online]. Available from: http://www.ahrc.ac.uk/FundingOpportunities/Documents/Research%20Funding%20Gui de.pdf [Accessed 8/12/2011]17.
•
The Economic and Social Research Council (ESRC) (2010) Framework for Research Ethics [online]. Available from: http://www.esrcsocietytoday.ac.uk/about-esrc/information/research-ethics.aspx [Accessed 21/6/2010]1741.

•
Turner, Victor (1982) From Ritual to Theatre. New York: PAJ Publications18.
•
Varela, Francisco (1999) The portable laboratory18. In: Laboratorium. Antwerpen Open, DO iT [online]. Available from: http://www.e-flux.com/projects/do_it/manuals/artists/v/V001/V001A_text.html [Accessed 10/2/13]18.
•
Vergne, Philippe and Ilesanmi, Olukemi (2000) Conversation part 118. In: Blair, Dike, ed. (2000) Let's Entertain: Life's Guilty Pleasures (Exhibition Catalogue). Minneapolis: Walker Art Center, pp. 18 - 2818.
•
Victoria & Albert Museum (2009) Decode (Exhibition Catalogue). London: Victoria & Albert Museum18.
•
von Hantelmann, Dorothea (2006) I18. In: Morgan, Jessica, ed. (2006) Carsten Höller: Test Site. London: Tate Publishing, pp. 18-3518.
•
Waisman, Nina: (2009) Fusing bodies: a consideration of techno-spliced gestures in interactive installations18. In: Digital Arts and Culture [online]. Available from: http://escholarship.org/uc/item/0kp6h4z8 [Accessed 02/08/20101]18.
•
Walker, John A. and Chaplin, Sarah (1997) Coping with theory18. In: Walker, John A. and Chaplin, Sarah (1997) Visual Culture: An Introduction. Manchester: Manchester University Press, pp. 51-6418.
•
Warr, Tracey (2000) Preface18. In: The Artist’s Body. London: Phaidon Press, pp. 11-1518.
•
Weibel, Peter and Jansen, Gregor, eds. (2006) Light Art from Artificial Light - Light Medium in the 20th and 21st Century Art. Karlsruhe: ZKM18.
•
Weiser, Mark (1991) The computer for the twenty-first century18. Scientific American. September, pp. 94-1018.
•
Winnicott, D.W. (1971) Playing and Reality. New York: Tavistock/Routledge18.
•
Yablonsky, Linda, ed. (2004) What’s so funny about contemporary art?18 ARTnews 103 (8) [online]. Available from: http://www.artnews.com/issues/article.asp?art_id=1590 (Accessed 18/04/2010)18.
•
Youngblood, Gene (1970) Nam June Paik: Cathode Karma18. In: Youngblood, Gene (1970) Expanded Cinema. New York: P. Dutton & Co., pp. 302-30918.
•
Zeisel, John (1984) Inquiry by Design: Tools for Environment-Behavior Research. Cambridge: Cambridge University Press18.
•
Zielinski, Siegfried (2010) Art after the media, keynote18. In: Interdisciplinary in the Creative Arts, University for the Creative Arts Research Conference. Unpublished18.
•
Zimmerman, Eric (2012) Jerked Around by the Magic Circle - Clearing the Air Ten Years Later [online]. Available from: http://www.gamasutra.com/view/feature/6696/jerked_around_by_the_magic_circle_.php?page=1 [Accessed 14/5/13] (Cited page numbers refers to printed article from website)19.